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(54) **Composition and method for controlling biological growth using stabilized sodium hypobromite in synergistic combinations**

(57) A synergistic composition and method for controlling biological growth in industrial fluids are disclosed, wherein the composition comprises stabilized sodium hypobromite and at least one compound selected from the group consisting of coco alkyldimethylamine oxide, n-coco alkyltrimethylenediamine, tetra-alkyl phosphonium chloride, 7-oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid and 4,5-dichloro-2-n-octyl-4-isothiazoline-3-one.

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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 7445

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	EP 0 913 091 A (NALCO CHEMICAL CO) 6 May 1999 (1999-05-06) * paragraphs '0018!', '0019!', '0025!'-'0028!; claims 15,16 *	1-15	A01N59/00 A01N43/90 A01N43/80 A01N57/34 A01N33/24
X	EP 0 471 481 A (BETZ EUROPE, INC) 19 February 1992 (1992-02-19) * page 2, line 1-21 *	1-10,12, 13	/(A01N59/00, 57:34,43:90, 43:80,33:24)
Y	* page 3, line 3-21; tables V-VI *	11,15	
X	WO 96 14092 A (GRACE W R & CO) 17 May 1996 (1996-05-17) * page 3, line 21 - page 4, line 8 *	1-10,12, 13	
Y	* page 5, line 3 - page 6, line 9 *	11,15	
Y	US 5 468 739 A (WHITEKETTLE WILSON K ET AL) 21 November 1995 (1995-11-21) * column 3, line 52 - column 4, line 65 *	11	
Y	EP 0 479 405 A (NALCO CHEMICAL CO) 8 April 1992 (1992-04-08) * the whole document *	11,15	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	WO 99 06320 A (NALCO CHEMICAL CO) 11 February 1999 (1999-02-11) * page 7, line 1-20 * * page 11, paragraph 3 - page 13, paragraph 1 * * page 18, paragraph 3 - page 19, paragraph 2 *	1-15	A01N
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 5 April 2001	Examiner Klaver, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03/82 (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION
SHEET B

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1 - 13 (all partial)

Synergistic compositions of stabilized sodium hypobromite and a compound selected from cocoalkyl dimethylamine oxide and N-cocoalkyl trimethylene diamine and methods of using these compositions.

2. Claims: 1 - 13 (all partial)

Synergistic composition of stabilized sodium hypobromite and tetra alkyl phosphonium chloride and methods of using this composition.

3. Claims: 1 - 13 (all partial)

Synergistic composition of stabilized sodium hypobromite and 7-oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid and methods of using this composition.

4. Claims: 1 - 13 (all partial)

Synergistic composition of stabilized sodium hypobromite and 4,5-dichloro-2-n-octyl-4-isothiazoline-3-one and methods of using this composition.

5. Claims: 14,15

Synergistic combinations of stabilized hypobromite and a second biocide as defined by claim 14 and a method of controlling macrobiological growth as defined by claim 15.

The application lacks unity within the meaning of Article 82 EPC for the following reasons:

The common concept linking together the compositions as defined by present claims 1 and 14 is the synergistic effect between the stabilized sodium hypobromite on the one hand and the second biocidal ingredient on the other. However, synergistic compositions for controlling biological growth in industrial aqueous systems comprising stabilized sodium hypobromite are known from EP 913 091 A1 (= D1). This document discloses such combinations in which the second biocidal agent is either a mixture of 5-Cl-2-Me-4-isothiazolin-3-one and 2-Me-4-isothiazolin-3-one or one of the compounds mentioned in claim 14 of the present application (see D1, page 4, paragraphs 0025-0028 and claims 14 and 16).

The second biocidal ingredients of the various synergistic combinations of the application differ structurally substantially. The various embodiments of the present application (inventions number 1 - 5) hence are not linked by a novel common general inventive concept, contrary to the requirements of Art. 82 EPC.

Since the search could be completed without additional work, the applicant was not invited to pay additional search fees (Guidelines B



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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

VII 2.3).

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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05-04-2001

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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